# 2.0 PROJECT DESCRIPTION

PG&E, the Applicant, is proposing to replace approximately 11 miles of a partially inactive, 16-inch natural gas transmission line, Line 108, which extends from the Thornton Station, just south of the Mokelumne River in San Joaquin County, to the Elk Grove Station, just south of Elk Grove Boulevard in Sacramento County (see Figures 2.0-1 and 2.0-2). The proposed new pipeline diameter would be 24 inches. The majority of the proposed Project utilizes PG&E's existing land rights by paralleling the partially inactive 16-inch pipeline. A combination of construction techniques would be used to install the pipeline – trench, horizontal directional drill (HDD), and hammer bore. PG&E would also install a pressure limiting station at the Elk Grove Station and remove a bridge that historically supported a section of the partially inactive 16-inch natural gas pipeline over the Cosumnes River.

The open trench pipeline construction technique uses conventional trenching and backfilling for pipeline installation. The HDD construction technique uses a hydraulically-powered horizontal drilling rig to tunnel under vertically and/or horizontally large sensitive surface features such as water courses, levees, and wetlands. Hammer boring is a non-steerable pipeline construction technique that drives an open-ended pipe for short distances under surface features such as roads using a percussive hammer. For this construction method, pits are required on either side of the surface feature to be avoided. See Section 2.3.2, New Pipeline Construction Procedures, for detailed descriptions of these and other pipeline construction techniques that would be used for the proposed Project.

## 2.1 PROPOSED FACILITIES

### 2.1.1 Underground Facilities

The proposed pipeline would be designed, constructed, operated, and maintained in accordance with all applicable requirements included in the U.S. Department of Transportation (DOT) regulations in 49 Code of Federal Regulations (CFR) 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards." The proposed Project would also be subject to California Public Utilities Commission (CPUC) standards as embodied under General Order 112E.

The majority of the proposed pipeline would consist of 0.375-inch wall thickness steel pipe (Grade X-60) designed for a Maximum Allowable Operating Pressure (MAOP) of 720 pounds per square inch gauge (psig). Industry standards for pipeline sections

installed via Horizontal Directional Drill (HDD) technology require a pipe diameter to wall thickness ratio (D/t) of 50 or below. Therefore, HDD sections would consist of 0.500-inch wall thickness steel pipe (Grade X-60) for added strength during the installation process. Gas would flow north from the Thornton Station to the Elk Grove Station. The initial maximum actual operating pressure would be 490 psig matching the lower MAOP of the upstream pipe south of the Project area. The proposed pipeline would serve distribution customers in Elk Grove and southeast Sacramento County south of Mack and Gerber roads.

The following sections summarize the proposed construction techniques that would be used to install the pipeline by route segment. The construction techniques are described in greater detail under Section 2.3, Construction Procedures.

## THORNTON STATION TO TWIN CITIES ROAD

The southern end of the proposed Project would be at the Thornton Station, just south of the Mokelumne River (Figure 2.1-1). From the station, the proposed pipeline would be trenched north approximately 100 feet to the proposed exit hole location of the Mokelumne River/Cosumnes River HDD. The HDD would be approximately 2,600 feet long, approximately 70 feet below ground surface (bgs), and would start approximately 750 feet north of the Cosumnes River within the Cosumnes River Preserve (Figure 2.1-2). It would require a 2,600-foot long pull-back area that would extend south of the Thornton Station along existing agricultural fields (Figure 2.1-1). From the Mokelumne River/Cosumnes River HDD entry point, the proposed pipeline would be trenched to the north approximately 170 feet to the entry hole of the Cosumnes River Preserve HDD, which would span approximately 3,300 feet and would be approximately 50 feet bgs (Figure 2.1-2). From the Cosumnes River Preserve HDD exit hole, the proposed pipeline would continue to be trenched to the north for approximately 2,500 feet to a location just south of Desmond Road. The proposed pipeline would be installed under Desmond Road with an approximately 70-foot long hammer bore that would be approximately 10 feet below the ground surface (Figure 2.1-3).

North of Desmond Road the pipeline would be trenched for approximately 1,000 feet to a point where it would be installed using a 1,400-foot HDD approximately 50 feet bgs to avoid an unnamed tributary to Snodgrass Slough (Figure 2.1-3). North of the HDD the

Insert Figure 2.0-1 Regional Overview (11”x17” EA Figure 2-1)

Insert Figure 2.0-2 Location Map (11”x17” EA Figure 2-2)

Insert Figure 2.1-1 Construction Techniques #1 (8.5”x11” EA Figure 2-3)

Insert Figure 2.1-2 Construction Techniques #1 (8.5”x11” EA Figure 2-4)

Insert Figure 2.1-3 Construction Techniques #1 (8.5’”11” EA Figure 2-5)

proposed pipeline would be located outside of the Cosumnes River Preserve. Within the Cosumnes River Preserve the proposed pipeline would be installed in the existing 15-foot easement, approximately 6 feet east of the existing deactivated 16-inch line (Figure 2.1-3). The remaining 2,700 feet of the pipeline extending to Twin Cities Road would be trenched through alfalfa fields (Figure 2.1-3). North of the preserve, the alignment of the proposed pipeline would be approximately 35 feet to the east of the existing pipeline.

### Twin Cities Road to Franklin Station

The proposed pipeline would be installed beneath Twin Cities Road using a 140-foot long hammer bore that would be eight feet below the ground surface (see Figure 2.1-3). North of the road, the proposed pipeline would be trenched for approximately 2,500 feet to the point where the pipeline would be routed west, and away from the existing pipeline easement. To the west, the proposed pipeline would be constructed under the Union Pacific Railroad (UPRR) tracks and Franklin Boulevard using a 200-foot long hammer bore that would be 12 feet below the ground surface (Figure 2.1-3). At a location west of Franklin Boulevard, the pipeline would continue north in a trench approximately 3 to 6 feet west of the Franklin Boulevard right-of-way for approximately 8,100 feet through alfalfa fields, Dierssen Road, a vineyard, and a private driveway to a location south of Lambert Road (Figure 2.1-4).

Lambert Road and an AT&T Fiber Optic building just south of Lambert Road would be crossed using an approximately 1,000-foot HDD approximately 50 feet bgs (Figure 2.1-5). North of the Lambert Road/AT&T Fiber Optic building HDD, the pipeline would align 15 feet to the west of the existing 16-inch pipeline. Trenching would continue north of the HDD through rural residential/agricultural lands for approximately 2,900 feet to the existing Franklin Station.

### Franklin Station to Bilby Road

North of Franklin Station, the proposed pipeline would avoid an irrigation ditch with an approximately 80-foot long hammer bore that would be 12 feet below the ground surface (Figure 2.1-5). From the northern hammer bore hole location, the proposed pipeline would continue to be trenched north for approximately 2,400 feet through agricultural fields to a point where Franklin Boulevard veers west, away from the proposed pipeline alignment. At this location, the proposed pipeline would be installed

Insert Figure 2.1-4 Construction Techniques #1 (8.5”x11” EA Figure 2-6)

Insert Figure 2.1-5 Construction Techniques #1 (8.5”x11” EA Figure 2-7)

under Franklin Boulevard using a hammer bore approximately 180 feet long and 12 feet below the ground surface. North of the Franklin Boulevard hammer bore, the proposed pipeline would be trenched adjacent to the west side of the UPRR right-of-way for 3,600 feet through Point Pleasant Road and agricultural fields to a point just south of an unnamed tributary to Stone Lake (Figure 2.1-6). The tributary would be crossed with an approximately 140-foot long hammer bore that would be 10 feet below the ground surface. North of the tributary hammer bore, the proposed pipeline would continue to be trenched for approximately 4,200 feet across agricultural fields, a private driveway, and Core Road to an irrigation canal. The proposed pipeline would cross the irrigation canal with a 150-foot long hammer bore that would be 12 feet below the ground surface, and then would continue north in a trench for approximately 2,000 feet through agricultural land to a point just south of the Carmo Dairy, which would be crossed with an approximately 1,500-foot HDD approximately 50 feet bgs. North of the Carmo Dairy HDD, the proposed pipeline would be installed in a trench for approximately 1,600 feet to an irrigation ditch that would be avoided using a 100-foot long hammer bore that would be 10 feet below the ground surface (Figure 2.1-7). At a location approximately 1,000 feet north of the Carmo Dairy HDD exit hole, the existing pipeline alignment crosses to the east side of the UPRR right-of-way, diverging from the proposed pipeline alignment. North of the hammer bore, the proposed pipeline would continue north in a trench for approximately 2,200 feet veering slightly west around the UPRR right-of-way to Bilby Road.

**Bilby Road to Elk Grove Boulevard**

The proposed pipeline would be trenched for approximately 800 feet in the southern edge of Bilby Road, west to Franklin Boulevard (Figure 2.1-7). At the intersection of Franklin Boulevard and Bilby Road, the proposed pipeline would be routed north in a trench on the eastern edge of Franklin Boulevard to a point approximately 1,800 feet north of the intersection, where a drainage canal would be crossed using an approximately 1,000-foot long HDD approximately 50 feet bgs underneath Franklin Boulevard. From the HDD exit hole, the proposed pipeline would continue north in a trench on the eastern edge of Franklin Boulevard for approximately 1,800 feet to just south of the intersection of Franklin Boulevard and the UPRR.

At the field just south of the intersection, the proposed pipeline would be installed under Franklin Boulevard and through the Stone Lakes National Wildlife Refuge using a HDD to a location 300 feet south of the Elk Grove Station (Figure 2.1-8). In the Stone Lakes

Insert Figure 2.1-6 Construction Techniques #1 (8.5”x11” EA Figure 2-8)

Insert Figure 2.1-7 Construction Techniques #1 (8.5”x11” EA Figure 2-9)

Insert Figure 2.1-8 Construction Techniques #1 (8.5”x11” EA Figure 2-10)

National Wildlife Refuge, the proposed pipeline would be installed within the existing 15-foot easement at a horizontal distance of approximately six feet east of the existing line. This HDD would end just south of the Elk Grove Station for a total distance of approximately 6,500 feet at approximately 50 feet bgs. The HDD was designed to avoid a drainage canal and direct disturbance to vernal pools and seasonal wetlands in the refuge. The proposed HDD would require a pullback area approximately 6,500 feet long that would extend north of the Elk Grove Station, between an existing sound wall and the UPRR (Figures 2.1-9 and 2.1-9a). The remaining 300 feet of the proposed pipeline would be open trenched to the Elk Grove Station.

### 2.1.2 Aboveground Facilities

The proposed Project would require installation of several valve extensions, actuators, valve hand wheels, risers, meters, Supervisory Control and Data Acquisition (SCADA) equipment, and other appurtenances within and adjacent to the existing facilities at the Thornton, Franklin, and Elk Grove stations.

At Thornton Station, a proposed buried mainline valve would be installed at the station tie-in and would include an above ground gear operated valve stem with blow down lines (Figure 2.1-10). Due to the PG&E's long term plans of increasing the pipeline diameter of other segments of Line 108, proposed piping at Thornton Station would accommodate the future installation/operation of a smart pig launcher. However, such plans would probably not be implemented within the next ten years.

At Franklin Station, a proposed buried mainline valve would be installed adjacent to existing Valve 56.25 and would include an above ground gear operated valve stem with blow down lines.

The proposed Project would also require the installation of a Pressure Limiting Station (PLS) adjacent to the PG&E's existing Elk Grove Station, designed for reducing, or "limiting," pressure in the proposed pipeline to match the 412 psig MAOP of that portion of Line 108 located north of the Elk Grove Station. The proposed PLS would be installed to the south of the existing Elk Grove Station requiring the purchase of an easement approximately 1,560 square feet that would expand the existing fenced area to a total of 5,664 square feet. Detailed designs of the proposed PLS are not complete at this time; however, the station would consist of gas regulation and monitoring equipment which would provide primary and backup routing of gas flow (called runs) through the station. Parallel and independent runs would be provided, and each run

Insert Figure 2.1-9 Construction Techniques #1 (8.5”x11” EA Figure 2-11)

Insert Figure 2.1-9a Construction Techniques #1 (8.5”x11” EA Figure 2-11a)

1 Insert Figure 2.1-10 Typical Valve Installation (8.5”x11” EA Figure 2-12)

would contain regulator and monitor valves. The proposed primary run, which would contain a regulator and monitor valve, would normally be used to regulate (throttle) the flow of gas through the station. The proposed standby run, which would also contain a regulator and monitor valve, would be available if the primary run would be out of service. The proposed standby regulator would normally be in the closed position. The monitor valves would normally be in the wide open position, and throttle gas only when a regulator failure would allow the station's downstream pressure to exceed the regulator set points. The regulators and monitors would be equipped with pneumatic pilots and their set points would only be able to be changed locally. An existing 20-foot tall SCADA tower and other equipment would be used to provide alarms and pressure information for the station. It also would provide position status of both of the regulator valves and monitor valves. If utility power were to be lost at the station, battery back-up would be available to provide four to eight hours of power to the SCADA and control equipment.

PG&E would also install eight-foot tall pipeline markers on both sides of each road crossing and at appropriate locations along the proposed pipeline route. In addition, a rectifier used for cathodic protection would be installed at a location along the proposed pipeline route that has yet to be determined.

### 2.1.3 Bridge Removal

At the request of the Bureau of Land Management (BLM), PG&E is proposing to include as part of the proposed Project the removal of an approximately 630-foot long suspension bridge that crosses the Cosumnes River. The bridge once supported the Line 108 gas pipeline across the river, but the pipeline was removed from the bridge at an unknown date. The bridge was likely constructed in the 1930s or 1940s and is relatively intact. The bridge is supported by two piers, and two anchor blocks, one of each on both the north and south sides of the Cosumnes River (Figure 2.1-11). In addition to the removal of the bridge, PG&E would remove the north anchor block and north pier to a level one foot below the natural ground and backfill to the surface. The bridge has been painted with a lead-based paint so its removal would require special measures to prevent the introduction of contaminants into the environment.

Insert Figure 2.1-11 Bridge Plan, Elevation, and Details (8.5”x11” EA Figure 2-13)

## 2.2 LAND REQUIREMENTS

### 2.2.1 Pipeline Rights-of-Way and Additional Construction Work Areas

PG&E proposes a 75-foot-wide temporary use area (TUA) for general pipeline trenching to accommodate the equipment needed to lay the 24-inch-diameter pipe in a 42-inch-wide trench, an equipment travel lane, and a spoil pile for the excavated soils (Figure 2.2-1). A 40-foot-wide temporary use area would be used for construction in Bilby Road and Franklin Boulevard. Constricted workspace along Bilby Road would require that excavated soils be transported to a proposed adjacent temporary use area south of Bilby Road (shown previously in Figure 2.1-7). Each of the seven proposed HDDs would require an approximately half-acre temporary use area for equipment that would be set up at the proposed entry and exit points (Figure 2.2-2) and 75-foot wide temporary use areas would be required for the HDD pull sections, the length of which would be proportional to the HDD length. Each of the eight hammer bores would also require a half-acre temporary use area at the entry and exit points.

PG&E proposes to obtain a 50-foot-wide permanent easement over the new pipeline and an additional 25-foot construction easement to accommodate trenching activities along the applicable portions of the proposed pipeline route. It is PG&E's standard policy to obtain 50-foot-wide permanent easements surrounding underground pipelines for purposes of pipeline maintenance and to minimize potential damage and disruption to infrastructure if ground-disturbance activity is proposed near the pipeline. The easements would be purchased from the existing landowners, who would also be compensated for PG&E's use of temporary use areas during construction. Restrictions in the easement would prohibit the planting of trees or vines within 10 feet of the pipeline centerline for protection of the pipe, but other uses would be allowed. Within the Cosumnes River Preserve and north of the UPRR/Franklin Boulevard intersection through the Stone Lakes National Wildlife Refuge, the proposed pipeline would be installed within PG&E's existing 15-foot permanent easement.

Construction of the proposed Project would require the use of a construction yard and staging areas. A one-acre staging area would be located at the south end of the proposed route near the existing Thornton Station (shown previously in Figure 2.1-1) as well as at the north end of the proposed route near the Elk Grove Station (shown previously in Figure 2.1-8). An additional 15-acre construction yard on the east side of Franklin Boulevard, just south of the community of Franklin, would be used to store

Insert Figure 2.2-1 Typical 75-foot Construction ROW (8.5”x11” EA Figure 2-14)

Insert Figure 2.2-2 Typical Site Plan, Horizontal Drilling Rig (8.5”x11” EA Figure 2-15)

equipment and as a centralized location for the construction crews (shown previously in Figure 2.1-7). The pipeline segments would be stored where they would be unloaded from the railcars, either in a location near Lodi or in Thornton.

### 2.2.2 Aboveground Facilities

PG&E would be required to obtain additional land rights adjacent to and south of the existing Elk Grove Station to accommodate installation of the new PLS and future installation of a smart pig receiver, in compliance with 49 CFR, Subpart O, which requires accommodation of such devices. The proposed PLS would increase the size of the Elk Grove station to 5,664 square feet. Installation of the pig receiver is not a part of the proposed Project, but would be part of PG&E's long term plans associated

with increasing the pipeline diameter of other segments of Line 108. Such plans would probably not be implemented within the next ten years.

## 2.3 CONSTRUCTION PROCEDURES

### 2.3.1 Pipeline Conversion Procedures

The existing 16-inch pipeline would remain in place and would continue to provide limited distribution service in the area. No construction activities are required.

### 2.3.2 New Pipeline Construction Procedures

Pipeline trenching construction in rural environments generally proceeds as a moving assembly line. Open trenching techniques would be used to construct approximately 69 percent of the proposed pipeline. HDD methods would be used to construct approximately 29 percent of the proposed pipeline to cross large waterways and sensitive resource areas. Hammer boring would be used to construct approximately two percent of the proposed pipeline to cross roads and small waterways (Table 2.3-1).

**Table 2.3-1. Construction Technique Summary**

| Construction Type | Distance (Feet) | Approx. Depth (Feet bgs) | Percent of Total |
|---|---|---|---|
| Trench | 36,220 | 7.5 | 62.0 |
| Trench in Roadways | 3,600 | 7.5 | 6.1 |
| Horizontal Directional Drill | 17,355 | 50 to 70 | 30.0 |
| Hammer Bore | 1,095 | 8 to 12 | 1.9 |
| **Total** | **58,270** | **N/A** | **100.0** |

Source: Adopted from PG&E 2006a.

Before the start of construction, PG&E would complete easement and permit acquisitions and finalize land surveys to locate the centerline of the proposed pipeline and temporary use areas. Also, PG&E would hold a preconstruction meeting between permitting entities and the construction crew. Prior to construction, the entire proposed pipeline right-of-way would be videotaped to document existing conditions and access roads. The 75-foot-wide construction right-of-way, HDD pull sections, staging areas, construction yard, and other temporary use areas would be surveyed and staked, along with existing utility lines and other sensitive resources identified by Federal and State agencies to prevent accidental damage during pipeline construction.

**Clearing and Grading**

Where necessary, the construction work area would be cleared and graded to provide a relatively level surface for trench-excavating equipment and a sufficiently wide workspace for the passage of heavy construction equipment. Removal of trees in the Project area would be avoided where feasible, but some tree removal may be necessary. As discussed in Section 4.1, Biological Resources, mitigation for tree removal would be provided.

All survey monuments, including United States Geological Survey (USGS) monuments, would be identified and protected during construction activities. If monuments are accidentally damaged or disturbed, PG&E would report the incident to the appropriate agency and would be responsible for the restoration of the monument at its original surveyed location.

Where necessary, erosion controls would be installed immediately following initial disturbance of the soils and maintained throughout construction to contain excavated material within the approved temporary use areas. Erosion controls would consist of methods described in PG&E's Water Quality Construction Best Management Practices Manual (PG&E 2006b). Before grading would begin, arrangements would be made with the respective property owners and tenants to avoid conflicts with normal land use and operation.

**Trenching**

PG&E would remove, stockpile, and replace topsoil in accordance with landowner stipulations. Trenches would be excavated to a depth sufficient to: (1) provide minimum cover required by DOT specifications (i.e., between 18 and 36 inches depending on area class [see Section 2.7.3, Pipe Wall Classifications for more on area classes] and

cover types); (2) install the proposed pipeline in such a manner to accommodate current agricultural practices; and (3) meet code requirements for proposed activities in roadways. The trench would be approximately 7.5 feet deep to allow for approximately five feet of cover in agricultural lands (exceeding the DOT standard of up to three feet of cover). The proposed Project would meet Sacramento County Code, Chapter 12.08, Construction in Streets, for activities in roadways. The width of the trench would generally be 42 inches, with wider areas where necessary to accommodate construction personnel to work in the trench. Spoil piles would be placed on the opposite side of the trench from construction traffic. Along the proposed pipeline alignment on the south side of Bilby Road from Franklin Boulevard to approximately 400 feet east of Franklin Boulevard, spoils would need to be hauled away and stockpiled at the temporary use area further east on the south side of Bilby Road (shown previously in Figure 2.1-7). In some cases, the material could be placed on the working side of the trench and graded to be level to permit construction traffic flow.

Three Sacramento County roads (Dierssen, Point Pleasant, and Core), field access roads, and driveways would be crossed during trenching (Figure 2.3-1). Access to all county roadways and driveways would be generally maintained with any disruption lasting for no more than four hours. PG&E's contractors would repair any damage to the roadway surface or underground facilities, including irrigation and drainage systems, immediately after construction is completed. Trenches typically would not remain open for more than five days in any one area, and there would be approximately 21 days between initial grading and backfilling. Open trenches would either be fenced or otherwise delineated for safety during non-working hours.

**Horizontal Directional Drilling**

The pipeline would cross the Mokelumne and Cosumnes Rivers, portions of the Cosumnes River Preserve and Stone Lakes National Wildlife Refuge, and other sensitive areas using the HDD construction technique, totaling approximately 17,200 feet in length (Table 2.3-2). This technique uses a hydraulically-powered horizontal drilling rig supported by a drilling mud tank and a power unit for the hydraulic pumps and mud pumps. The variable-angle drilling unit would be adjusted to the proper design angle for the proposed Project (8 to 10 degrees). The first and smallest of the cutting heads would begin the pilot bore at the surveyed entry point in a small pit on the ground surface. The first section of drill stem would have an articulating joint near the drill cutting head that would be controlled by the bore operator. Successive drill stem

Insert Figure 2.3-1 Typical Uncased Road Crossing (8.5”x11 EA Figure 2-16)

**Table 2.3-2. Horizontal Directional Drill Summary**

| HDD Name | Length (Feet) |
|---|---|
| Mokelumne/Cosumnes River | 2,577.1 |
| Cosumnes River Preserve | 3,242.6 |
| Unnamed Slough | 1,427.7 |
| AT&T Building/Lambert Road | 1,026.8 |
| Carmo Dairy | 1,527.8 |
| Drainage Canal | 1,072.9 |
| Stone Lakes NWR | 6,480.2 |
| **Total** | **17,355.1** |

Source: Adopted from PG&E 2006a.

sections would be added as the drill head would make its way under the crossing. The drill head would be articulated slightly by the operator to follow a designed path under the sensitive feature and climb upward toward the exit point.

Once the pilot hole is completed, a succession of larger cutting heads and reamers are pulled and pushed through the bore hole until it is the appropriate size for the proposed pipeline. While drilling, drilling mud[1] would be pumped under high pressure through the drill stem to rotate the cutting head and return the soil cuttings to the small pit at the surface entry point. The mud would be pumped from this pit to a processing unit where the soil cuttings would be removed and the mud reused for drilling. As part of the bore design process, geotechnical surveys of the subsurface conditions were conducted to determine the underlying geologic strata along the drill path. Infrequently, the geologic strata above the drill may be weaker than anticipated and/or unconsolidated and the high pressure of the drilling mud may result in a fracture of these strata, allowing drilling mud to rise to the ground surface. The drilling operation would be stopped immediately if this occurs. This situation is termed an “inadvertent release” or “frac out” and is usually resolved by reducing the mud system pressure or increasing the mud viscosity. Mud clean-up activities for inadvertent releases are described in Section 2.3.5, Construction Contingency Planning.

While drilling, pipe sections to be pulled through the crossing would be strung on pipe supports in the proposed temporary use areas. The pipe sections would be welded together, x-rayed, and a protective epoxy applied to the joints. A hydrostatic pre-test of the pipe sections would then be performed to ensure integrity prior to pulling. After the drill hole is the correct diameter, a pulling head would be welded on the end of this pipeline section, and the pipe would be pulled through the hole until it surfaces on the

[1] Drilling mud is a mixture of bentonite (a type of clay) and water used to extract drill cuttings from the drill hole as well as to lubricate the drill bit.

other side. Bulldozers with side booms and slings or roller cradles would support the pipe as it would slowly be pulled through the drill hole. The completed drilled crossing would then be connected to the existing pipeline and the entry and exit points would be backfilled and restored as described in Section 2.6, Post Construction Activities.

Line 108 would be installed a minimum of approximately 60 feet underneath the bed and banks of any navigable waterbody and at a minimum 35 feet below any other feature to be crossed by HDD technology. PG&E anticipates that a total of five to seven weeks would be needed to complete all seven HDDs. Proposed HDD activities under the Mokelumne and Cosumnes rivers are anticipated to be completed during the South Delta Construction Window of June 1 through November 30, to avoid impacts to special status fish species. Proposed HDD activities in the Cosumnes River Preserve and Stone Lakes National Wildlife Refuge would occur during the summer months during the giant garter snake construction window of May 1st through October 1st (see Section 4.1, Biological Resources) and to minimize wetland impacts.

If evening construction would be required during HDD operations, a light plant would be stationed at the entry and exit points. Each light plant would consist of four 1,000-watt fixtures and would be operated by a diesel generator.

**Hammer Boring**

In addition to the HDDs, there would be approximately eight conventional bores, totaling approximately 1,100 feet. For the proposed Project, pneumatic pipe ramming, also known as hammer boring, has been selected as the method that would be used for the bore installation. Pipe ramming is a non-steerable system that drives an open-ended pipe using a percussive hammer, resulting in the displacement of soil limited to the wall thickness of the pipe. For this construction method, pits would be dug on either side of the surface feature to be avoided. The pits would be approximately 10 to 15 feet wide and 50 feet long. The depth would depend on the feature to be avoided. The boring equipment and pipe would be lowered into the pit and aligned at the appropriate depth and angle to achieve the desired exit location. A compressor would supply air to the pneumatic ramming tool to thrust the pipe forward. A cutting shoe may be welded to the front of the lead pipe to help reduce friction and cut through the soil.

Several options are available for ramming various lengths of pipe. An entire length of pipe could be installed at once or, for longer distances, one section at a time could be installed. In that case the ramming tool would be removed after each section is in place and a new section would be welded on to the end of the newly installed section. The

pneumatic ramming machine would be connected to the new section and ramming would continue. In certain installations, a winch could be connected to the lead end of the pipe to assist in pulling it out. This would require installation of a connection via a pilot hole.

Depending on the size of the installation, spoil from inside the pipe would be removed with compressed air, water, a pig system, or a combination of techniques. A seal cap would be installed on the starter pit side of the installation and spoil would be discharged into the receiver pit.

**Epoxy Coating**

The pipe would be externally coated for protection at the mill with 16 mils (1 mil = 1/1000 inch) of fusion-bonded epoxy (FBE) before being shipped to either Lodi or Thornton in 80-foot lengths. In addition, the pipe used for boring would be coated with 40 mils of Powercrete abrasion resistant overcoating (ARO). The weld-joint ARO on HDD-installed pipe would be installed at the temporary use areas. Best management practices (BMPs) as outlined in PG&E's Water Quality Construction Best Management Practices Manual would be employed to ensure that these activities would not impact hydrology or other resources.

**Pipe Delivery, Stringing, and Welding**

The pipe would be delivered either from the construction yard, or from an off-site coating facility, to the proposed pipeline right-of-way. Transporting the required amount of pipe to the proposed alignment would result in the following number of truck trips from Interstate 5 (I-5) to Franklin Boulevard:

- 16 truck trips on Elk Grove Boulevard;
- 33 truck trips on Hood Franklin Boulevard;
- 44 truck trips on Twin Cities Road; and
- 6 truck trips on Thornton Road

Once in the temporary use areas, individual pipe sections would be aligned and welded together into long strings. All pipeline sections would be "butt-welded" – welded together without the ends overlapping. All welds would be x-rayed to ensure structural integrity and compliance with applicable DOT regulations. Welds that do not meet American Petroleum Institute 1104 specifications would be repaired or removed. Once

the welds are approved, the welded joints would be covered with a protective coating and the entire pipeline would be electronically and visually inspected for any faults, scratches, or other damage. Any pipe damage would be repaired before being lowered into the trench.

### Lowering-In, Tie-In, and Backfilling

The pipeline would be lowered into the trench with two or more sideboom tractors, spaced so that the unsupported pipe between them and between the pipe and ground surface would not overstress the pipe and cause buckling. Tie-in welds, made in the trench at the final pipeline elevation, would be used: (1) where the line would be obstructed by utilities crossing the trench; (2) at the ends of HDD and hammer bores; and (3) ends of lowered strings. The welds would be checked with x-ray and the entire pipeline would then be checked by caliper for geometrical integrity prior to final tie-in where necessary. Trench barriers or breakers would be installed before backfilling at specified intervals to prevent water movement along the pipeline. The trench would be backfilled using select excavated subsoils that meet PG&E's backfilling requirements, and topsoil would then be replaced and restored to its original condition using either tracked construction equipment or water to minimize future settling (Figure 2.3-2). It is estimated that approximately 6,550 cubic feet of spoil would need to be removed from the pipeline route. All excess spoil would be transported to a licensed facility, such as the county dump, for recycling and/or backfilling. A moderate level of compaction, 85 percent of maximum density using the American Society for Testing and Materials (ASTM) D-1557 test procedure, would be used to reduce the risk of uplift. Areas that would be under paved surfaces would be compacted to 95 percent or greater as specified by permitting entities.

### Hydrostatic Testing

The entire pipeline and each HDD segment would undergo hydrostatic testing, to DOT standards, prior to installation using water from the Sacramento County Water Agency or Woodridge Irrigation, in Thornton. The approximately 1.5 million gallons of water required for hydrostatic testing would be pumped through a filter into the test sections, pressurized to design-test pressure, and maintained at that pressure for a minimum of eight hours. Any leaks would be repaired and the section retested until specifications are achieved. Following testing, the water used to test the entire pipeline would be discharged into either the Mokelumne River or onto the Cosumnes River Preserve.

Insert Figure 2.3-2 Typical Cross Section of Trench (8.5”x11” EA Figure 2-17)

Water used to pre-test the individual HDD segments would be discharged to land along the pipeline right-of-way in accordance with permits. Water quality would be measured from the water source prior to use and after use during discharge to assure that water quality is not compromised as a result of the test. All hydrostatic testing water would be discharged using a flow manifold and energy dissipater to control the rate of discharge and to minimize erosion and turbidity to meet the standards set forth under the terms and conditions of the National Pollutant Discharge Elimination System (NPDES) permit and the General Order for Dewatering and Other Low Threat Discharges to Surface Waters, issued by the Central Valley Regional Water Quality Control Board (CVRWQCB).

Based on past experience with similar projects, PG&E anticipates that no contaminants would be introduced to the surface water during the testing process and that all samples would meet standards for gray water and that the water discharged from the hydrostatic test would pose no threat to any plants, fish, or animals.

**Pigging Procedure**

After Line 108 has been hydrostatically tested and dewatered, the contractor would run several “pigs” of various types (brush, cup, dish, polyethylene, etc.) to remove as much water from the pipeline as possible. Debris in the pipe would be minimal and any remaining residue would be removed from the pipe during the pigging procedure. The contractor would install temporary pig launchers and receivers to expedite this procedure and would monitor the amount of water removed to determine when the line is as dry as possible. Super dry air or other super dry compressed gases (usually nitrogen) would be blown through the pipe to bring the pipeline moisture down to 40 Fahrenheit degrees below the ambient dew point. This would ensure that the line would be dry and that equipment downstream of the new line would not freeze up due to water molecules in vapor condensing when pressures would be significantly reduced at regulating and metering stations throughout the system. The contractor would submit a final hydrostatic testing procedure to PG&E that would include the type of equipment to be used during the pigging and drying procedures.

**Blow-Down and Purging Procedure**

After hydrostatic testing and drying the pipeline, PG&E would review weather patterns with the Sacramento Metropolitan Air Quality Management District (SMAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) to determine an optimum

range of dates for connecting (tying-in) the proposed Project portion of Line 108 to the existing pipelines. Data from PG&E's Department of Meteorological Sciences would be used in coordination with SMAQMD and SJVAPCD to determine dates when air quality constraints would be minimal. Natural gas would be released during the blow-down/tie-in procedure. All local emergency service agencies and schools would be notified of the pending blow-down/tie-in within 72 hours of the proposed activities.

On the day of the tie-in, PG&E's personnel from the Sacramento Division Transmission and Regulation (T&R) Department would reduce the pressure in the existing Line 108 pipeline to zero pounds per square inch. PG&E's General Construction Division (GC) would then cut a draft hole at each end of the existing Line 108 (at the Elk Grove and Thornton stations). Air movers would be installed at the Elk Grove and Thornton stations to remove the gas from the pipeline and into the atmosphere. When both air mover locations are clear of gas, PG&E would proceed with tying-in the proposed new segment of Line 108.

When all tie-in welds are completed and the x-rays are accepted, the line would be turned over to PG&E's Sacramento Division T&R Department for operations. The air movers would be removed and valves would be set up to purge the air from the pipeline. The main line valve at Thornton Station would be opened and fresh air purged through to the Elk Grove Station. When it is determined that Line 108 is completely filled with natural gas, the blow-off valve would be closed and Line 108 would be brought up to operating line pressure.

### 2.3.3 Aboveground Facility Construction Procedures

The majority of all station piping would be pre-fabricated at the construction yard and then transported to the station locations for final assembly and tie-in to the pipeline facilities. After installation, the aboveground facilities would be fenced and painted.

### 2.3.4 Bridge Removal

Access to the bridge would be from the north, along defined access roads and PG&E's existing easement, through the Cosumnes River Preserve. In order to access the north anchor block and pier, a site access road would be constructed which would include a temporary boat launch area for either a pontoon supported temporary work platform or a portable shallow draft barge system. Typical construction equipment would be limited to a bulldozer, excavator, backhoe, and possibly a hydraulic truck crane, if required. A simple stiff-leg derrick could be used to lower the tower sections instead of the crane.

A temporary work platform would be installed with scaffolding and containment materials (tarps) to capture and collect any paint/coating debris. Once the platform is in place, the walkway, bracing, floor beams, longitudinal angles, and hangers would be dismantled and lowered to the platform. Once the hardware is released from the cable, the cable would be wrapped to contain the paint coating. The north end of the cables would be connected to a temporary anchor/winch system, cut loose from the original permanent anchor block, lowered to the work platform, cut into manageable pieces, and removed and disposed of at a landfill that accepts these types of materials with the rest of the structural elements.

The north anchor block and pier foundation concrete, which are above the mean water level, would be removed to one foot below grade using normal demolition techniques. This could include the use of a hand-held jackhammer or a breaker attachment on a backhoe.

Removal of the south pier would require the installation of a containment curtain around the base of the structure because it is surrounded by shallow water. Removal of the south anchor block would require clearing of brush and trees in order to provide access. Due to the invasive nature of these operations, and in consultation with the Bureau of Land Management, PG&E does not propose to remove the south pier and anchor block.

### 2.3.5 Construction Contingency Planning

PG&E has developed a number of contingency plans to be implemented during construction of the proposed Project if certain unexpected events occur.

#### HDD Abandonment Contingency Planning

If extreme conditions are encountered during horizontal directional drilling operations and retrieval of down-hole tools becomes impossible, the HDD contractor could be forced to abandon a portion of the directional drilled hole or possibly the entire hole. This could occur during any phase of the HDD process and could potentially require the abandonment and grouting of the hole. The HDD contractor would use procedures in order to substantially reduce the possibility of this occurring. However, the following are potential abandonment scenarios that could take place during different stages of the drilling process.

*Abandonment of Pilot Hole/Pilot Hole Continuation*

In the event that the HDD contractor becomes unsuccessful in completing the directional drill pilot hole and the hole must be abandoned, the HDD contractor would make every effort to remove as much pipe as possible from the hole and abandon the un-useable portion of the hole. Procedures would be invoked for the successful continuation of the drilling, including the following:

- The down-hole assembly would be advanced and the drill stem would be stopped;
- Cement, bentonite, or an industry approved fill material would be made available at the drill rig location;
- The drill mud rig would be prepared for pumping material down the hole through the drill stem; and
- Cement, bentonite, or industry approved fill material would be pumped down the hole through the drill stem as the drill stem is withdrawn, to displace bentonite (drilling mud) slurry in the hole.

*Abandonment during Reaming Operation*

In the event that drilling operations are suspended during reaming of the pilot hole, the following procedures would be enacted:

- Advancement of the reamers would be halted;
- Cement, bentonite, or an industry approved fill material would be made available at the drill rig location;
- The drill mud rig would be prepared for pumping material down the hole through the drill stem;
- Cement, bentonite, or industry approved fill material would be pumped down the hole through the drill stem as the drill string is withdrawn, to displace bentonite (drilling mud) slurry in the hole;
    - o If the Drilling Superintendent ascertains the need to replace the reamer with a cement head, the reamer would be withdrawn and replaced by a special head built for grouting;
- If the reamer cannot be extracted, the drill rig would be moved to the opposite side for removal of the reamer from the hole;

- A cement head would be sent down the hole on pilot string until the previously cemented reamed hole is pumped; and
- The drill string would be withdrawn and the hole pumped with cement or industry approved fill material to displace the bentonite slurry material.

**Contingency Plan for Inadvertent Release During HDD**

Inadvertent release of drilling fluids is a potential concern when HDD methods are used for construction conduits under sensitive habitats and waterways. While bentonite is a non-toxic substance, its inadvertent release into waterways could adversely impact aquatic species, smothering benthic invertebrates, aquatic plants, and fish and their eggs, with the fine bentonite particles.

In the event that drilling fluid would be noticeably lost from the bore hole, the driller would implement the following procedures:

1. Temporarily cease drilling operations, including pump shut down;
2. Notify the appropriate Federal and State agencies (including the CSLC) as soon as possible by telephone and/or facsimile of the release event, detailing the nature of the release and corrective actions being taken. The notified agencies will determine whether additional measures need to be implemented;
3. Dispatch experienced observers as required to monitor the area in the vicinity of the drilling, for inadvertent returns of drilling fluid at the ground surface and/or waterbody;
4. Identify the position of the drill head in relation to the point of entry; and
5. Re-start the pump and stroke the bore-hole up and down in stroke lengths up to 30 feet up to six times but no fewer than two in an effort to size the bore-hole annulus and re-open the circulation pathway.

In addition, the drilling fluid could be thickened within the guidelines set forth by the manufacturer to aid in re-establishing circulation as required depending on bore-hole conditions. Observers would continuously monitor for inadvertent fluid returns as long as the pump would remain on. Occasionally, based on the driller's discretion, the stroke length could be increased up to 90 feet or past the point at which drilling fluid circulation was lost.

If circulation is re-established, drilling would proceed as usual and monitoring for inadvertent fluid returns would take place once again if the rate of drilling returns progressively decreases at the fluid entry pit. If circulation is not re-established, monitoring for inadvertent fluid returns to the ground surface and/or waterbody would continue and drilling would proceed.

If the amount of inadvertent returns is not great enough to allow practical collection, the affected area would be diluted with fresh water and allowed to dry and dissipate naturally back into the earth. If the amount of returns exceeds that which could be suitably contained with hand placed containment barriers, small collection sumps with less than 134 cubic feet (3.8 cubic meter) capacities would be used to pump fluid back to the solids control system.

If drilling fluid returns are observed to be continuously surfacing above ground at an accessible location, the following procedure would be followed:

1. Pumping of the drilling fluid would immediately cease;

2. The location would be contained so that the drilling fluid could not migrate across the ground surface. Materials and equipment that could be used for containment include:

    - Straw bales;
    - Silt fence;
    - Check dams;
    - Backhoe for accessible areas;
    - Shovels;
    - Portable pumps;
    - Flashlights and light towers for night operations; and
    - Twenty 100-foot Sections of Hose

3. A small sump pit would be excavated at the location to provide a means for the fluid to be returned to either the drilling operations or a disposal site (i.e., pump through hose or into tanker);

4. The on-site contractor supervisor and PG&E representative would be notified;

5. Drilling operations would continue, maintaining the integrity of the containment measures and monitoring the fluid returns as required to ensure that no surface migration occurs;

6. Clean-up would be carried out once inadvertent returns are contained/controlled;

   - Fluid would be pumped to a secure containment vessel;
   - Area would be diluted with water; and
   - Area would be restored to original condition.

If inadvertent drilling fluid returns are observed to be surfacing above-ground at a location that is inaccessible, i.e. along the bed of a water body, or, into the water, the following procedures would be followed:

1. Follow the above procedures as outlined to the extent they are appropriate given the location of the returns.

2. Ensure that all reasonable measures within the limitations of the technology have been taken to re-establish circulation.

3. Continue drilling with the minimum amount of drilling fluid required to penetrate the formation and successfully install the product line.

**Hazardous Materials Contingency Planning**

The only known hazardous materials that would be on site during construction of proposed Project would be fuels and lubricants in the construction equipment. These materials would be stored at the Franklin construction yard, not on the construction right-of-way. The potential for a fuel/lubricant spill would be limited to the capacity of the involved equipment.

Hazardous materials would be managed on site as follows, in accordance with PG&E's Water Quality Construction Best Management Practices Manual:

- The amount of hazardous materials stored at the construction site, and the production and generation of hazardous waste at the construction site, would be minimized;

- Any hazardous materials and wastes would be covered or containerized and protected from vandalism;

- All hazardous materials and wastes would be clearly marked. Hazardous waste containers would be placed in secondary containment systems if stored at the construction site;

- All stockpiled cold mix, an asphalt mixture used exclusively for temporary paving needs, would be placed on plastic and covered with plastic;

- Waste materials would not be intermixed, because this would complicate or inhibit disposal and recycling options and could result in dangerous chemical reactions;

- Storm water that collects within secondary containment structures would be inspected before discharge to ensure that no pollutants are present. Contaminated storm water would be managed according to PG&E's Environmental Practices (EPs), including Vault Dewatering and Spill Prevention, Containment, and Countermeasure (SPCC) pond drainage;

- Spills from a secondary containment system would not be discharged;

- Hazardous waste would be segregated from other solid waste and disposed of properly; and

- In addition to following this best management practice, employees or contractors would be responsible for compliance with Federal, State, and local laws regarding storage, handling, transportation, and disposal of hazardous waste.

Should a spill occur on the construction right-of-way or at the Franklin construction yard, the following would be implemented:

- The spillage of material would be stopped if it could be done safely;

- The contaminated area would be cleaned, and contaminated materials would be properly disposed;

- For all spills, the Project foreman and/or the Environmental Representative would be notified;

- To the extent that it would not compromise clean up activities, spills would be covered and protected from storm water run-on during rainfall;

- Spills would not be buried or diluted with wash water;

- Used cleanup materials, contaminated materials, and recovered spill material would be stored and disposed of in accordance with Federal, State, and local regulations;

- Absorbent materials would be used to clean up spills. Spills would not be hosed down with water;
- All water used for cleaning and decontamination of a spill would be collected and disposed appropriately and would not be washed into storm drain inlets or watercourses. Disposal of these wastes would be coordinated with the Environmental Representative; and
- Spill cleanup kits would be kept in areas where any materials would be used and stored.

In the event of a spill, agency representatives or individuals designated by the following organizations would be contacted as necessary:

- California State Lands Commission - 24 Hour Emergency Response;
- National Marine Fisheries Service, Sacramento Office – to be contacted in event of release into a waterway;
- California Department of Fish and Game;
- Central Valley Regional Water Quality Control Board (CVRWQCB);
- U.S. Army Corps of Engineers (USACE);
- U.S. Fish and Wildlife Service (USFWS); and
- Bureau of Land Management (BLM).

## 2.4 CONSTRUCTION SCHEDULE

Construction of the proposed Project is expected to begin in May, 2008, and would take approximately three to four months to complete. Construction would occur between 6:00 a.m. and 7:00 p.m., Monday through Saturday, except for the HDD operations and hydrostatic testing, which may occur around the clock. Construction and installation of the proposed pipeline would require approximately 75 workers, of which approximately 30 percent would be local (PG&E 2006a).

## 2.5 ENVIRONMENTAL COMPLIANCE INSPECTION AND MITIGATION MONITORING

Pipeline construction would be performed in accordance with PG&E's Water Quality Construction Best Management Practices Manual, which is hereby incorporated into the proposed Project description (PG&E 2006b). PG&E has also proposed specific

Applicant Proposed Measures (APMs) designed to reduce the environmental effects of the proposed Project. The APMs, which are considered by the CSLC to be part of the proposed Project, are identified in the applicable issue area analyses presented in Section 4.0, Environmental Analysis. Several of the Section 4.0 issue area analyses also contain additional mitigation measures (MMs) that the CSLC has determined would be required to reduce potentially significant impacts to less than significant levels.

All of the Project APMs and MMs are consolidated in Section 6, Mitigation Monitoring Program. A full-time third-party compliance monitor under contract to the CSLC would be present during construction activities to monitor compliance with Project APMs, MMs, and other requirements. Other Federal and State agencies may also conduct inspections and monitoring to the extent determined necessary by the individual agency.

In addition to the mitigation monitoring conducted by the CSLC, PG&E would hire an Environmental Inspector (EI) to ensure compliance with all APMs, MMs, and permit requirements. The responsibilities of the EIs include ensuring that the environmental conditions of the EIR and other permits or authorizations are met. Specifically, the EI would be:

- Responsible for monitoring and ensuring implementation and compliance with all APMs and MMs identified in the EIR and construction contracts, as well as for other permits or authorizing documents;
- Empowered to order correction of acts that violate the environmental conditions of the EIR and any other authorizing document;
- A full-time position separate from all other activity inspectors; and
- Responsible for maintaining status reports.

## 2.6 POST CONSTRUCTION ACTIVITIES

Once the proposed Project is packed with gas to operating line pressure, the temporary use areas would be restored in accordance with pre-arranged landowner requirements. PG&E's contractor would obtain landowner verification that all restoration was completed to the satisfaction of the landowner prior to demobilizing from the right-of-way. Soil would be decompacted and reseeded in accordance with the landowners' requests. The alignment would be marked with 12-inch by 34-inch white and orange striped signs, placed approximately eight feet high in accordance with PG&E standards for gas line marking.

All construction material and debris would be removed and disposed of at appropriate landfills. All work areas would be graded and restored to pre-construction contours within 20 days of trench backfilling. Restoration activities would commence within six days of final grading.

All temporary access roads would be re-graded and restored in a manner similar to the pipeline right-of-way, unless the property owner requests the road to remain as is. All paving repairs would be made in accordance with current city and county requirements. Following construction of the proposed pipeline, the entire right-of-way would be videotaped to document post-construction conditions and access roads. No new access roads would be required for pipeline operation and maintenance.

## 2.7 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

### 2.7.1 Public Safety

Existing staff at PG&E's Sacramento Division T&R Department would operate and maintain the new pipeline, provide routine maintenance services, and respond to emergency situations in accordance with PG&E's Gas System Maintenance and Technical Support Emergency Plan Manual (EMP). The system would be constantly monitored and controlled by a SCADA system that would detect pressure drops in the pipeline indicating a leak or other operating problem. As an additional measure, to prevent third-party damage to the proposed pipeline at a future date, PG&E would take Global Positioning System (GPS) coordinates at the locations of all pipe welds in order to maintain an accurate location of the proposed pipeline once it is in the ground.

The pipeline would be operated and maintained in accordance with all applicable requirements included in the DOT regulations in 49 CFR 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards." Further, the proposed Project would be subject to CPUC standards as embodied under General Order 112E. In addition, the proposed pipeline would be operated in accordance with PG&E's EMP. The EMP contains procedures, including pre- and post-emergency planning, on-scene response, incident reports, etc., to be followed for prompt effective responses to significant upset conditions detected along the pipeline or reported by the public. Typical testing and inspection procedures that would be conducted by PG&E in compliance with Federal regulations include:

| Inspection/Testing | Frequency |
|---|---|
| Cathodic protection | Annually |
| Cathodic protection rectifier | Six times per year |
| Valve testing | Annually |
| Pipeline patrols | Annually |
| Leak Surveys | Annually |
| Facility risk assessment | Every seven years |

PG&E has in place procedures for operations, maintenance, and emergencies, as required under DOT regulations under 49 CFR Part 191 (reporting requirements), and 49 CFR Part 192 (transportation of natural gas), that would apply to the proposed pipeline.

Use restrictions required in the permanent easement would prohibit the planting of trees or vines within 10 feet of the pipeline centerline for protection of the pipe, but other agricultural uses would be allowed. These are restrictions of use and, thus, do not apply to naturally propagating trees or other native vegetation within the Cosumnes River Preserve and/or the Stone Lakes National Wildlife Refuge.

### 2.7.2 Corrosion Protection and Detection Systems

External corrosion control measures for the proposed Project include protective coating on the exterior of the pipe and use of cathodic protection systems. These systems are designed to meet the minimum requirements established by the DOT for protection of metallic facilities from external, internal, and atmospheric corrosion. The location and installation of a rectifier (used for cathodic protection of the pipe) would be determined during final engineering.

### 2.7.3 Pipe Wall Classifications

The standards in the Federal regulations are more stringent for pipelines placed near high human population densities. DOT regulations define area classifications, based on population density of the pipeline vicinity and on an area that extends for 660 feet (220 yards) on either side of the centerline of any continuous 1-mile length of the pipeline. The four area classifications are defined as:

- **Class 1:** A location with ten or fewer buildings intended for human occupancy.

- **Class 2:** A location with more than ten but less that 46 buildings intended for human occupancy.

- **Class 3:** A location with 46 or more buildings intended for human occupancy or where the pipeline lies within 300 feet (100 yards) of any building or small well-defined outside area occupied by 20 or more people during normal use.

- **Class 4:** A location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. In addition to population density, other factors are used to determine the design factor used within a class location. A higher safety factor must be used in the design formula for steel pipe that: (a) crosses the right-of-way of an unimproved public road, without a casing; or (b) crosses without a casing, or makes a parallel encroachment on, the right-of-way of a hard surfaced road, a highway, a public street, or a railroad.

In the Project area, the proposed pipeline would cross land that has minimal housing and is mostly a Class 1 location except for the portion along Franklin Boulevard and Bilby Road near the community of Franklin. See Figure 2.7-1 for the area classifications along the proposed pipeline route. The proposed pipeline would cross hard surfaced roads, public streets, and the UPRR, and would be installed in parallel encroachments of public streets without a casing. Navigable waterway crossings require a 0.5 design safety factor and are, thus, effectively Class 3 locations. These areas have been designated with the class location corresponding to the appropriate design factor. The entire pipeline has been designed to meet the design factor requirements of a Class 3 area.

### 2.7.4 High Consequence Area

The Office of Pipeline Safety and the DOT have identified specific locales and areas where inadvertent releases from pipelines could have the most significant adverse consequences. An equation has been developed that estimates the distance from a potential explosion at which death, injury, or significant property damage could occur. This is known as the potential impact radius (PIR) and is used to represent potential impact circles. Operators are required to calculate the potential impact radius for all points along their pipeline in order to identify specific populations and structures within each radius. Depending on the makeup of each impact circle, different classes have been designated to define a High Consequence Area (HCA) as follows: potential impact

circles that contain 20 or more structures intended for human occupancy; buildings that house populations with limited mobility; buildings that would be hard to evacuate; or buildings and outside areas where 20 or more people gather at least 50 days in any 12-month period. Specifically, HCAs include areas where a pipeline is within 300, 660, or 1,000 feet of a building or outside area where 20 or more persons congregate at least 50 days in any 12-month period. Operators must determine which segments of their pipeline could affect HCAs in the event of a release. This determination is made assuming a release can occur at any point. Operators are also required to devote additional efforts and analysis in HCAs to ensure the integrity of the pipelines. An HCA has been defined for the proposed Project at the intersection of Franklin Boulevard and Bilby Road.

### Emergency Response

PG&E's Sacramento Division T&R supervisor would implement guidelines and procedures established in PG&E's EMP, in the event of a pipeline-related emergency (e.g. gas leak, earthquake, accidental release of hazardous materials or waste, fire or explosion, and/or pipeline or facility damage). These procedures have been designed in accordance with State and Federal regulations, including 40 CFR Part 265, Health and Safety Code (Chapter 6.95), and Titles 19, 22, and 27 of the California Code of Regulations. This document is reviewed annually with local agencies to ensure that it is current and that all personnel understand the plan and their responsibilities.

## 2.8 FUTURE PLANS AND ABANDONMENT

The expected operational life of the proposed pipeline is about 50 years and is normally dictated by economic obsolescence. When the proposed Project reaches the end of its useful life, it would be deactivated in accordance with appropriate local, State, and Federal regulations enforced at the time that the pipeline would be taken out of service, including DOT's 49 CFR Part 192.

Insert Figure 2.7-1 Pipeline Class Location Map (11”x17” EA Figure 2-18)